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U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

APPEAL BRIEF TRANSMITTAL		Docket Number: **10191/2310**	Conf. No. **7377**
Application Number **10/098,650**	Filing Date **March 15, 2002**	Examiner **Charles D. GARBER**	Art Unit **2856**
Invention Title **MEASURING SYSTEM FOR A VISCOSITY MEASUREMENT OF LIQUIDS**		Inventor **Bernard JAKOBY et al.**	

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Date: 2/7, 2005 Reg. No. 36,197

Signature: _____
Jong H. Lee

Further to the Notice of Appeal dated December 2, 2004 (filed at the PTO on December 6, 2004) for the above-referenced application, enclosed are three copies of an Appeal Brief. Accompanying the Appeal Brief is the Appendix to the Appeal Brief.

The Commissioner is hereby authorized to charge payment of the 37 C.F.R. § 1.17(c) appeal brief filing fee of **$500.00**, and any additional fees associated with this communication to the deposit account of **Kenyon & Kenyon**, deposit account number **11-0600**.

Dated: 2/7, 2005 By: _____
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[10191/2310]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants	:	Bernhard JAKOBY et al.
Serial No.	:	10/098,650
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For	:	MEASURING SYSTEM FOR A VISCOSITY MEASUREMENT OF LIQUIDS
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APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

Applicants filed a Notice of Appeal dated December 2, 2004 (filed at the PTO on December 6, 2004) appealing from the Final Office Action dated August 4, 2004, in which claims 1-7, 9-11 and 13-19 of the above-identified application were finally rejected. This Brief is submitted by Applicants in support of their appeal.

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I. REAL PARTIES IN INTEREST

The above-identified Applicants and Robert Bosch GmbH of Stuttgart, Germany, are the real parties in interest.

II. RELATED APPEALS AND INTERFERENCES

No appeal or interference which will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal is known to exist to the undersigned attorney or is believed by the undersigned attorney to be known to exist to Applicants.

III. STATUS OF CLAIMS

Claims 1-7, 9-11 and 13-19 are pending in this application. Claims 8 and 12 have been canceled. Applicants appealed from the final rejection of claims 1-7, 9-11 and 13-19 made in the final Office Action mailed by the Patent Office on August 4, 2004. Of the claims presently on appeal, claim 1 is independent, and claims 2-7, 9-11, and 13-19 are dependent on claim 1.

IV. STATUS OF AMENDMENTS

No amendment has been made subsequent to the final Office Action mailed on August 4, 2004.

V. SUMMARY OF THE INVENTION

The present invention relates to a measuring system for measuring the properties of liquids, in particular for measuring the viscosity of a liquid. (Specification, p. 1, l. 2-4). A piezoelectric sensor device is immersed completely in the liquid to be measured in the container and has electric contact points for an electric control, the contact points being resistant with regard to the liquid. (P. 2, l. 3-7). Inside the container, electric leads are provided, which are resistant with regard to the liquid and are connectable to an electronic control/analyzer unit outside the container and to the contact points of the sensor device by a suitable conductive adhesive containing metal particles. (P. 2, l. 7-11). The measuring system according to the present invention has the

advantage that there is no influence on the electric properties of the piezoelectric sensor device during the measuring operation due to mechanical impact, and thus an accurate measurement of the viscosity of the liquid may be performed. (P. 2, l. 13-18). In addition, selecting suitable contact and lead wire materials and a suitable conductive adhesive guarantees complete immersion of the sensor device in the liquid to be measured, thereby further increasing the measuring accuracy. (P. 2, l. 18-21).

As shown in the Figure, which illustrates a cross section through a measuring system 1 according to an example embodiment of the present invention, a container 2 is designed in two parts, including a bottom 20 and a cap 21 detachably mounted thereon, and the container 2 is immersed completely in liquid 10 to be measured. (P. 4, l. 10-16). Cap 21 has openings 4 for a liquid exchange situated on the side and/or at the top, the opening closer to the top may function as a liquid inlet, and the opening situated closer to the bottom may function as a liquid outlet. (P. 4, l. 16-20). Bottom 20 of the container 2 has two glass bushings 3. (P. 4, l. 20).

The entire measuring system 1 is situated in a liquid 10 whose viscosity or other liquid properties are to be measured, i.e., the entire container 2 is filled with liquid 10 through openings 4. (P. 4, l. 22-25). According to an exemplary embodiment, oil is used as liquid 10; however, other liquids may also be measured. (P. 4, l. 27-29). A sensor device 5, which may be a piezoelectric quartz crystal, for example, has a disk-shaped design and is completely immersed in liquid 10 in container 2. (P. 4, l. 31-33). Disk-shaped quartz sensor 5 has two electric contact points 6, which are gold or chromium electrodes 6 according to the present embodiment. (P. 4, l. 33-36). For a specific use in oil, e.g., motor oil or transmission oil, gold or chromium electrodes have proven to be especially robust materials. (P. 4, l. 36 - p. 5, l. 2).

Contact points 6 are connected by a suitable conductive adhesive 8 to electric lead conductors 7, which are designed as gold-plated or chromium-

plated wires according to the present embodiment. (P. 5, l. 4-7). These gold-plated or chromium-plated wires have proven to be especially robust materials for use in oil. (P. 5, l. 7-9). Electric lead conductors 7 may also be designed as bifurcated contact springs for mechanical accommodation of the piezoelectric quartz disk 5. (P. 5, l. 9-11).

Conductive adhesive 8 guarantees the electric and mechanical contact of the piezoelectric quartz disk 5 with contact springs (electric lead conductors) 7 at contact points 6. (P. 5, l. 13-15). According to the present embodiment, isotropic, electrically conductive adhesive 8 advantageously is an epoxy resin, a phenolic resin and/or a polyimide. (P. 5, l. 15-18). The material of conductive adhesive 8 can also be based on an epoxy-phenol. (P. 5, l. 18-19). Isotropic conductive adhesives 8 are provided with metal particles, such as nickel and/or gold particles, in the form of flakes or beads or mixtures thereof. (P. 5, l. 19-21). The nickel and/or gold particles may have a particle size of approx. 2 μm to 20 μm. (P. 5, l. 22-23). The concentration of the nickel and/or gold particles in conductive adhesive 8 amounts to approx. 75 to 95 wt%. (P. 5, l. 23-25).

Electric lead conductors 7 may either pass directly through bottom 20 of container 2 through glass bushings 3 or be connected to corresponding connecting wires in bottom 20 of container 2 by suitable joining methods, e.g., welding. (P. 5, l. 27-30). An important factor is that an electric connection of sensor device 5 to an electronic control and analyzer unit outside of container 2 for electric control of sensor device 5 and subsequent analysis of the results is established via contact points 6 and electric lead conductors 7, with contact points 6, conductive adhesives 8 and electric lead conductors 7 being resistant with regard to liquid 10 to be measured. (P. 5, l. 30 - p. 6, l. 2).

In addition to the specific features described in connection with the above-described example embodiment, several modifications may be made. For example, liquids other than oil may be measured, using contact materials and

conductive adhesives containing suitable metal particles and electric lead conductor materials that are resistant to the particular liquid. (P. 6, l. 4-12). In addition, a hermetic seal of the container may be established without any negative effect on the electric connection of the sensor device to the external electronic control/analyzer unit. (P. 6, l. 14-17).

VI. GROUNDS OF REJECTION TO BE REVIEWED

The following grounds of rejection are presented for review on appeal in this case:

(A) Whether claims 1-5, 7, 9-11, 13-19 are rendered obvious under 35 U.S.C. § 103(a) by Sensors and Actuators by Martin et al. ("the Martin reference") in view of U.S. Patent 4,922,745 to Rudkin et al. ("the Rudkin reference"), U.S. Patent 5,337,605 to Schultz et al. ("the Schultz reference"), and U.S. Patent 6,479,763 to Igaki et al. ("the Igaki reference").

(B) Whether claim 6 is rendered obvious under 35 U.S.C. § 103(a) by the Martin reference as modified by the Rudkin, Schultz, and Igaki references, and further in view of Japanese Patent No. 0637339A to Kitsuta ("the Kitsuta reference").

VII. GROUPING OF CLAIMS

For each ground of rejection, all claims subject to the rejection will be argued as a single group.

VIII. ARGUMENTS

A. Claims 1-5, 7, 9-11 and 13-19

Claims 1-5, 7, 9-11 and 13-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the document Sensors and Actuators by Martin et al. ("the Martin reference") in view of United States Patent No. 4,922,745 to Rudkin et al. ("the Rudkin reference"), United States Patent No. 5,337,605 to Schultz et al. ("the Schultz reference"), and United States Patent

No. 6,479,763 to Igaki et al. ("the Igaki reference"). Applicants respectfully submit that the rejection should be reversed for at least the following reasons.

Initially, in response to the Examiner's comment in the Advisory Action that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references," Applicants note that it is inherently impossible to discuss a combination of references without discussing individual references in the combination. To the extent Applicants are discussing the teachings of the individual applied references in order to address the asserted combination of references, Applicants are merely reflecting the Examiner's discussion of the teachings of the individual applied references.

According to the Examiner, the Martin reference discloses an optically polished AT-cut quartz wafer onto which a smooth resonator, a textured resonator, and a resistance temperature device are formed. This quartz wafer is depicted as being integrally attached to two RF connectors. The Examiner asserts that the quartz wafer forms a base, which may be considered a bottom. In addition, the "Examiner does not consider that Martin discloses a container." (8/4/04 Office Action, p. 2). However, the Examiner nevertheless asserts that **because the quartz wafer is immersed in liquid during a measurement** of the liquid, the Examiner considers this to be "equivalent to an immersible container being immersed in the liquid during a measurement." (8/4/04 Office Action, p. 3). Applicants respectfully submit that the Examiner's conclusion is legally and factually incorrect, as explained below.

Initially, the Examiner bears the initial burden of presenting a prima facie case of obviousness, which requires that the prior references teach or suggest all **of the claimed limitations**. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Claim 1 recites, in relevant parts, "an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet." To the extent the Examiner

concedes that Martin does not disclose a container, the Martin reference cannot be construed as disclosing or teaching the claimed ***structural limitation*** of "an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet," regardless of whether the quartz wafer of Martin being immersed in liquid during a measurement of the liquid is indeed "equivalent to an immersible container being immersed in the liquid during a measurement." While the Examiner focuses on the *functional equivalence*, it is not permissible to simply ignore the fact that the claimed *structural limitation* is not disclosed or suggested in the applied prior art. "Claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." MPEP 2114 (citing In re Danly, 120 U.S.P.Q. 528, 531 (C.C.P.A. 1959). Accordingly, "[e]ven if the prior art device performs all the functions recited in the claim, the prior art cannot anticipate the claim if there is any structural difference." MPEP 2114. For at least these reasons, Martin reference cannot be construed as teaching or suggesting "an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet."

To the extent the Examiner may be contending that the Martin reference inherently teaches the claimed structural limitation of "an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet," Applicants note that the Examiner must provide a "basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics ***necessarily*** flow from the teachings of the applied art." (See M.P.E.P. § 2112; emphasis in original; and see *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int'f. 1990)). "Inherency, however, may not be established by probabilities or possibilities," i.e., "mere that a certain thing may result from a give set of circumstance is not sufficient." In re Robertson, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999). Clearly, the mere fact that **the quartz wafer is immersed in liquid during a measurement** of the liquid, as taught in Martin, does not necessarily lead to the conclusion that an immersible container is, or

needs to be, present. Accordingly, the Martin reference does not inherently teach the claimed structural limitation of "an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet."

Independent of the above, Applicants respectfully note that immersion of the quartz wafer of Martin simply cannot be equivalent to immersing in the liquid "an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet." The **quartz wafer** disclosed in the Martin reference **does not enclose a piezoelectric sensor**, nor is there any suggestion of using an enclosing container. As described in the Martin reference, a smooth resonator, a textured resonator, and a resistive temperature device are formed onto the quartz wafer. Thus, the quartz wafer does not enclose a piezoelectric sensor, and there is no suggestion of using an enclosing container.

Additionally, as acknowledged by the Examiner, the quartz wafer of Martin does not have a cap or at least one of a liquid inlet and liquid outlet. The Examiner cites the Rudkin reference as disclosing a shroud, and the Examiner asserts that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to include a shroud with fluid ingress (inlet) and egress (outlet) in order to offer protection which 'may be important where foreign bodies within a metered fluid are likely to impact.'" (Office Action, August 4, 2004, p. 4). In order for a claim to be rejected for obviousness under 35 U.S.C. § 103(a), not only must the prior art **teach or suggest each element of the claim**, but the prior art must also **suggest combining the elements in the manner contemplated by the claim**. See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990). The only motivation the Examiner has provided for modifying the Martin reference to include the Rudkin shroud is that it "***may be important where foreign bodies within a metered fluid are likely to impact.***" However, there

is no indication or suggestion in the overall teachings of the Martin and Rudkin references to make the modification suggested by the Examiner. Clearly, the Martin reference does not suggest that foreign bodies are present during use of the monolithic sensor, or that such foreign bodies (if present) would impact the sensor, and the Rudkin reference does not teach or suggest the use of the shroud as protecting the sensor from foreign bodies (as explained in further detail below), which means the Examiner's asserted reason for modifying the arrangement of Martin to include the Rudkin shroud (i.e., it "***may be important where foreign bodies within a metered fluid are likely to impact***") is not found in the overall teachings of Martin and Rudkin. Applicants respectfully submit that the Examiner's conclusion is mere speculation without any concrete support in the applied prior art references.

The Rudkin reference does not teach or disclose the use of the shroud as protecting the sensor from foreign bodies. The Rudkin reference states:

> Before the transducer of the embodiment described can be successfully used operationally, calibration will be required. Production transducers will normally be calibrated in at least on known liquid and in a sufficient volume thereof for substantially unbounded conditions to apply. In use, however, boundaries and barriers proximate the fork structure may be unavoidable, and the calibration will be invalid, since surfaces in the metered fluid near the transducer effectively increase the fluid added mass.
>
> A transducer with an alternative form of shroud provides a solution to the problem. (Rudkin, col. 3., ll. 34 – 45).

According to the Rudkin reference, the purpose of the shroud is to alleviate a problem of increasing the fluid added mass when the fork structures of the transducer are proximate to boundaries and barriers. ***The shroud is not provided for affording the protection to the sensor against foreign bodies***. In fact, the piezoelectric sensors in the sensor depicted in the Rudkin reference are ***housed in one or more cavities within the tines***. Thus, the piezoelectric sensor material is not exposed or immersed in the liquid during a measurement

of the liquid, and the shroud does not offer any protection to the piezoelectric material.

Furthermore, the Martin reference fails to disclose, teach, or suggest any need to offer protection against foreign bodies coming into contact with the piezoelectric material, which protection against foreign bodies is the rationale asserted by the Examiner for the motivation to add the Rudkin shroud. Since the Rudkin reference fails to disclose, teach, or suggest using a shroud for protecting the piezoelectric sensors against such foreign bodies, the overall teachings of Martin and Rudkin provide no suggestion or motivation to modify the arrangement of the Martin reference with the shroud disclosed in the Rudkin reference, in contrast to the assertion made by the Examiner. In addition, to the extent the Examiner contends in the Advisory Action (mailed on November 3, 2004) that "Applicants' argument that Rudkin does not teach the use of the shroud as protecting the sensor from foreign bodies . . . is non-responsive because arguments do not address specific teaching Examiner cited from the reference," Applicants note that Applicants' arguments are directly responsive to the Examiner's arguments: the Examiner's asserted reason for modifying the arrangement of Martin to include the Rudkin shroud was that the shroud would offer protection that "***may be important where foreign bodies within a metered fluid are likely to impact,***" and Applicants' argument directly refuted this reason asserted by the Examiner for making the modification.

Additionally, as acknowledged by the Examiner, the Martin reference does not disclose or teach a "conductive adhesive containing metal particles" for coupling electric lead conductors to the electric contact points, as recited in claim 1. The Examiner cites Schultz for teaching the use of a "metal-filled conductive adhesive," and further cites Igaki as teaching conductive adhesive agents including metal particles. The Examiner asserts that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to use metal filled adhesive potting to join the leads and

pads ***as it advantageously 'prevents corrosion or degradation of the connection' from moisture which would be a problem for a sensor immersed in liquid***." (Final Office Action, August 4, 2004, p. 5). The Examiner's asserted rationale for combining the teachings of Schultz and/or Igaki is clearly that "***it advantageously 'prevents corrosion or degradation of the connection' from moisture which would be a problem for a sensor immersed in liquid***." However, the Examiner's asserted rationale is clearly not supported by the overall teachings of the applied references. The primary Martin reference discloses a sensor having gold electrodes, (Martin, p. 215), and there is no suggestion in the overall teachings of the applied references that the gold electrodes are prone to corrosion or degradation due to moisture from the liquid being measured. Since there is no indication in the overall teachings of the applied references that there is a corrosion problem with the gold electrodes disclosed in the primary Martin reference, there is no suggestion or motivation to modify the primary Martin reference with the additional teachings of Schultz and Igaki references to prevent "***corrosion or degradation of the connection' from moisture which would be a problem for a sensor immersed in liquid***," as asserted by the Examiner. Applicants note that "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." MPEP 2143.01 (citing In re Mills, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)). Accordingly, without any objective suggestion or motivation to make the modification asserted by the Examiner, the obviousness conclusion cannot be sustained.

Since there is no motivation to combine the teachings of the Martin, Rudkin, Schultz and Igaki references in the manner asserted by the Examiner to arrive at the invention recited in Claim 1, these applied references do not render Claim 1 or its dependent Claims 2-5, 7, 9-11, and 13-19 obvious under 35 U.S.C. §103(a). It is therefore respectfully requested that this rejection be reversed.

B. Claim 6

Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over the Martin reference as modified by the Rudkin, Schultz, and Igaki references, and further in view of Japanese Patent No. 06347339A to Kitsuta ("the Kitsuta reference").

In order for a claim to be rejected for obviousness under 35 U.S.C. § 103(a), not only must the prior art **teach or suggest each element of the claim**, but the prior art must also **suggest combining the elements in the manner contemplated by the claim**. See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990). "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." MPEP 2143.01 (citing In re Mills, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)).

Initially, claim 6 depends from claim 1. Claim 1 recites "an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet." The Martin reference cannot be construed as teaching or suggesting "an immersible container having a cap, a bottom, [and] an enclosed piezoelectric sensor device," particularly since the Examiner concedes that this claimed structure is not taught or suggested by the Martin reference. Furthermore, there is no motivation or suggestion to combine the teachings of Rudkin and Martin in an attempt to achieve "an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet." In addition, there is no motivation or suggestion to combine the teachings of the Schultz and Igaki references with the teachings of the Martin and Rudkin references in an attempt to achieve a "conductive adhesive containing metal particles" for coupling electric lead conductors to the electric contact points, as recited in claim 1. The Kitsuta reference does not overcome these deficiencies of the Martin, Rudkin, Schultz and Igaki references as applied against claim 1,

particularly since the Kitsuta reference is merely cited by the Examiner for teaching a "wire 5, of stainless steel plated with gold as a lead." Since claim 6 depends from claim 1, the Martin, Rudkin, Schultz, Igaki, and Kitsuta references similarly do not render claim 6 obvious under 35 U.S.C. §103(a). It is therefore respectfully requested that this rejection be reversed.

IX. CONCLUSION

For the foregoing reasons, it is respectfully submitted that the final rejection of claims 1-7, 9-11 and 13-19 should be reversed.

Respectfully submitted,

KENYON & KENYON

Dated: 2/7, 2005

By: _____
Richard L. Mayer
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CUSTOMER NO. 26646
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[10191/2310]

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Signature: _____
Jong H. Lee

APPENDIX TO APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

The claims involved in this appeal, claims 1-7, 9-11, and 13-19, in their current form after entry of all amendments presented during the course of prosecution, are set forth below:

APPEALED CLAIMS:

1. A system for measuring a property of a liquid, comprising:

an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet,

the immersible container being immersed in the liquid during a measurement of the property of the liquid,

the piezoelectric sensor device being completely immersed in the liquid during the measurement of the property of the liquid, the sensor including:

electric contact points for an electric control and which are resistant to the liquid;

electric lead conductors which are resistant to the liquid and which are connectable to a measuring unit outside the liquid; and

a suitable conductive adhesive containing metal particles and for coupling the electric lead conductors to the electric contact points.

2. The system of claim 1, wherein viscosity is the property of the liquid that is measured.

3. The system of claim 1, wherein the piezoelectric sensor device is configured as a disk-shaped quartz crystal and is excitable to shearing oscillations by the electric control.

4. The system of claim 1,wherein the liquid to be measured is an oil.

5. The system of claim 1, wherein the electric contact points are one of gold and chromium electrodes.

6. The system of claim 1, wherein the electric lead conductors are one of gold-plated wires and chromium-plated wires.

7. The system of claim 1, wherein the electric lead conductors are configured as bifurcated contact springs.

9. The system of claim 1, further comprising:

bushings situated in at least one of the cap and the bottom of the protective container, wherein the electric lead conductors are led through the protective container through the bushings.

10. The system of claim 9, wherein the bushings are made of glass.

11. The system of claim 1, further comprising:

connecting leads in at least one of the cap and the bottom of the protective container, wherein the electric lead conductors are connectable to the connecting leads.

13. The system of claim 1, wherein the at least one opening is situated in the cap of the protective container.

14. The system of claim 1, wherein the protective container is hermetically sealable.

15. The system of claim 1, wherein the conductive adhesive is an isotropic, electrically conductive adhesive including at least one of an epoxy resin, a phenolic resin, and a polyimide.

16. The system of claim 1, wherein the conductive adhesive is an isotropic, electrically conductive adhesive including an epoxy-phenol.

17. The system of claim 1, wherein the metal particles in the conductive adhesive are at least one of nickel particles and gold particles.

18. The system of claim 17, wherein the at least one of nickel particles and gold particles have a particle size of approximately 2 μm to 20 μm.

19. The system according to claims 17, wherein the at least one of nickel particles and gold particles are provided in the conductive adhesive in a concentration of 75 to 95 wt %.

Respectfully submitted,

KENYON & KENYON

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